California Marine Life Protection Act Initiative

Draft Regional Profile of the MLPA South Coast Study Region (Point Conception to the California/Mexico border)

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A Note to the Reader

This *Draft Regional Profile of the MLPA South Coast Study Region (Pigeon Point to the California/Mexico border)* provides information to support implementation of the Marine Life Protection Act (MLPA) in the MLPA South Coast Study Region (Point Conception in Santa Barbara County to the California/Mexico border in San Diego County). The primary purpose of the regional profile is to assist the MLPA South Coast Regional Stakeholder Group (SCRSG) and other participants in the MLPA planning process to develop an understanding of the ecological and socioeconomic context of the region.

While the initial draft of this regional profile has been created by MLPA staff and contractors, completing document will be part of a joint fact-finding effort. Members of the SCRSG and MLPA Master Plan Science Advisory Team (SAT) will review and comment on the draft version of this document, making factual additions and corrections to the initial information. Local knowledge will be incorporated throughout the document and especially in the subregional summaries (section 9.0), which will be drafted during the first portion of the SCRSG process.

MLPA Initiative and California Department of Fish and Game (CDFG) staff have compiled and developed spatial data layers and have conducted geographic information system (GIS) analyses to support the planning process. This regional profile includes maps of only selected spatial data layers. Additional spatial data layers for the study region will be available through an online tool in the fall of 2008.

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Note that the maps in this regional profile are numbered based on the section of the profile where the map data are discussed. For instance, the information displayed on map "3.1-1" is discussed in section 3.1 and is the first map presented in that section. Map 3.1-2 is the second set of maps discussed in section 3.1.

Acronyms and Abbreviations

Abalone Recovery and Management Plan	ARMP
Area of special biological significance	ASBS
California Coastal National Monument	CCNM
U.S. Bureau of Land Management	BLM
California Code of Regulations	CCR
California Department of Fish and Game	CDFG
California Endangered Species Act	CESA
California Environmental Quality Act	CEQA
California Center for Ocean Sciences Education Excellence	COSEE
California Ocean Protection Council	COPC
California Public Utilities Commission	CPUC
California Recreational Fisheries Survey	CRFS
California State Coastal Conservancy	CSCC
Channel Islands National Marine Sanctuary	CINMS
Commercial Fisheries Information System	CFIS
Commercial passenger fishing vessels	CPFVs
Critical coastal area	CCA
Dichloro-diphenyl-dichloroethylene	DDE
Dichloro-diphenyl-trichloroethane	DDT
Dover sole, thornyhead, sablefish complex	DTS
Endangered Species Act (federal)	ESA
Environmental Sensitivity Index	ESI
Essential fish habitat	EFH
California Fish and Game Code	FGC
Geographic information system	GIS
Large marine ecosystem	LME
Land use plan	LUP
Liquified natural gas	LNG
Local coastal plan	LCP
Long-term Monitoring Program and Experiential Training for Students	LiMPETS
Los Angeles Regional Water Quality Control Board	LARWQCB
Marine Life Protection Act	MLPA
Marine Mammal Protection Act	MMPA
Marine protected area	MPA
U.S. Minerals Management Service	MMS
National Environmental Protection Act	NEPA
National Marine Fisheries Service	NMFS
National Oceanic and Atmospheric Administration	NOAA
National Park Service	NPS
Office of Spill Prevention and Response	OSPR
Pacific Fishery Management Council	PFMC
Partnership for Interdisciplinary Studies of Coastal Oceans	PISCO
MLPA Master Plan Science Advisory Team	SAT
MLPA South Coast Regional Stakeholder Group	SCRSG

MLPA South Coast Study Region	SCSR
Southern California Coastal Ocean Observing System	SCCOOS
Southern California Coastal Water Research Project	SCCWRP
Square statute miles	mi^2
State marine conservation area	SMCA
State marine park	SMP
State marine reserve	SMR
Statute miles	mi
Surface Water Ambient Monitoring Program	SWAMP
State water quality protection area	SWQPA
State Water Resources Control Board	SWRCB
Southwest Marine and Aquatic Educators' Association	SWMEA
Total maximum daily load	TMDL
University of California	UC
U.S. Fish and Wildlife Service	USFWS
U.S. Coast Guard	USCG
U.S. Environmental Protection Agency	USEPA
U.S. Geological Survey	USGS

Executive Summary

The Marine Life Protection Act Initiative is a public-private partnership designed to help the State of California implement the Marine Life Protection Act (MLPA) using the best readily available science, as well as the advice and assistance of scientists, resource managers, experts, stakeholders and members of the public. The MLPA requires the state to redesign existing state marine protected areas (MPAs), and to establish a cohesive network of MPAs to protect, among other things, marine life, habitats, ecosystems and natural heritage, as well as to improve recreational, educational, and study opportunities provided by marine ecosystems.

A regional approach is being used to redesign MPAs in state waters along California's 1,100 mile coast. Implementation of the MLPA will occur in five study regions: the central coast, the north central coast, the south coast, the north coast, and San Francisco Bay study regions. As part of the MLPA Initiative, a master plan was created to provide a framework to guide the planning process within individual study regions. The central coast study region (Pigeon Point to Point Conception) was the first study region to complete the MLPA planning process and the California Fish and Game Commission adopted 29 central coast MPAs in April 2007. Planning has also concluded for the north central coast study region (Alder Creek to Pigeon Point) and MPA proposals are under review with the California Fish and Game Commission. The south coast study region (Point Conception south to the California/Mexico border) represents the third study region to begin the MLPA Initiative planning process. Following the south coast process, the MLPA Initiative will address the north coast study region (Alder Creek north to the border of Oregon), and finally the San Francisco Bay study region (from the Golden Gate bridge to the Carquinez Bridge).

Marine protected areas within the MLPA South Coast Study Region will be evaluated and redesigned with input from a regional stakeholder group, a science advisory team, a blue ribbon task force, the California Department of Fish and Game (CDFG), the California Department of Parks and Recreation, and other interested parties. This document, the *Marine Life Protection Act (MLPA) Regional Profile of the South Coast Study Region*, is intended to support the MPA planning process by providing background information and data on the biological, oceanographic, socioeconomic, and governance characteristics of the south coast study region. The regional profile will be reviewed and revised based on input from regional stakeholders. This profile will assist stakeholders and decision-makers in evaluating existing MPAs in the study region and developing alternative proposals for a network of MPAs that meet the goals of the MLPA and that form a component of the statewide MPA network.

Regional Overview

The MLPA South Coast Study Region spans a straight line distance of approximately 557 miles of the California coastline (with 1,045 miles of actual shoreline) from Point Conception in Santa Barbara County to the California/Mexico border in San Diego County. Encompassing 2,355 square miles of coastal waters, the study region extends from the shoreline (mean high tide) to a maximum depth of approximately 3,938 feet off the northeast corner of San Clemente Island. The study region includes state waters surrounding the Channel Islands and other offshore rocks. The population, broad range of interests, sensitive marine ecosystem, and the

unique conditions of the Southern California Bight in combination create a complex setting. Some of the unique features of the study region include:

- The intersection between two major biogeographic regions at Point Conception, in the northern portion of the study region;
- A complex system of oceanographic currents, including a large gyre known as the Southern California Eddy, which circulates in a counter-clockwise direction;
- Diverse habitats ranging from sandy beaches and rocky coasts to soft and hard deep habitat, with more than 30% of the study region shoreline composed of sandy beaches;
- Deep offshore areas, including channels, basins, and canyons, interspersed by shallow ridges, situated on a broad continental shelf;
- Kelp forests dominated by giant kelp and associated species assemblages;
- Nearly 40 estuaries and lagoons with tidal influence, including Anaheim Bay, Upper Newport Bay, Bolsa Chica, and many others;
- High biodiversity including 481 species of fish, 4 species of sea turtles, 195 species of birds, 7 species of pinnipeds, and more than 5000 species of invertebrates;
- The Channel Islands, which are made up of 8 major islands as well as smaller rocks and islets, and support large numbers of marine birds and mammals and provide for consumptive and con-consumptive recreational activities;
- Several large urban centers, including Los Angeles and San Diego, located adjacent to the study region, whose populations utilize coastal resources for recreational activities and commercial industries, while presenting unique challenges for water quality;
- Productive commercial and recreational fisheries, targeting a wide diversity of species, that help support economies of coastal communities and provide fresh seafood to the region and world;
- The greatest number of individuals participating in non-consumptive activities, such as diving, surfing, kayaking, beach-going, and boat-based wildlife viewing, in the state of California; and
- Nearly half the existing state MPAs in California, as well as several federally managed areas, including the Channel Islands National Marine Sanctuary, Channel Islands National Park, Santa Monica Mountains National Recreation Area, and Cabrillo National Monument.

Ecological Setting

The MLPA South Coast Study Region is characterized by high productivity, high biodiversity, diverse habitat types, and the unique oceanographic conditions of the Southern California Bight. The biodiversity of this study region was one of the driving factors in the designation of the Channel Islands National Marine Sanctuary and the associated ten state marine reserves and two state marine conservation areas implemented in 2003.

All of the habitats listed in the MLPA or recommended by the science advisory team for representation within MPAs, with the exception of seamounts (which do not occur within state

waters) are found within the study region. For most of these habitats, there are some mapped data available for use in the planning process.

- Most of the study region is relatively shallow and is less than 100 meters in depth, although some areas such as the basins, canyons, and areas near the southern Channel Islands, are much deeper.
- Intertidal zones include sandy beaches, rocky shores, tidal flats, coastal marsh and man-made structures.
- Estuaries, with their associated open water, soft bottom, coastal marsh, tidal mud flats, and eelgrass beds, exist throughout the study region. There are two types of estuaries in the south coast: those permanently or semi-permanently open to the ocean and those seasonally separated from the ocean by sand bars. While there are some large estuaries (Anaheim Bay, and upper Newport Bay) in the study region, most are small and are periodically closed to tidal influence. Species that depend on these estuaries seasonally, or at some point in their life history, include the Pacific staghorn sculpin, bay pipefish, arrow goby, and California halibut, and sharks.
- Eelgrass (*Zostera sp*.) beds are found throughout the study region in estuaries (e.g., Mugu Lagoon), open coast, and along the coast (e.g., along the Santa Barbara coast). Surfgrass (*Phyllospadix sp*.), is common in the study region and is associated with open ocean habitat (e.g., northern Channel Islands and along the San Diego coast).
- Giant kelp (*Macrocystis pyrifera*) dominates the study region with dense canopies that support diverse marine life. Kelp beds have been mapped at a fine-scale resolution in six annual surveys (1989, 1999, 2002, 2003, 2004, and 2005) and are found off rocky headlands, including Point Conception, Point Dume, Palos Verdes, La Jolla, and other locations. Kelp forests are also abundant in waters surrounding the Channel Islands.
- Hard-bottom habitats (rocky reefs) are less common (25% of the total study region area) than soft-bottom habitats in the study region in all depth zones. The species composition for hard substrate varies with depth zone. Kelp forests are associated with shallow rock bottoms and deep-sea corals and sponges are found in deep rock habitat. Coarse scale data showing the locations of hard bottom habitat is available for the study region. As these data tend to over-represent the presence of rock, fine-scale data have been collected during the summer of 2008 and will be available for MPA planning.
- Sandy and soft-bottom habitats dominate both shorelines and subtidal substrates in the south coast study region. These habitats do not have the relief or structural complexity of hard-bottom habitats, but do host a number of unique species adapted to the dynamic environment and the low-relief physical characteristics. Invertebrates and bottom-dwelling fish are the most common species found in soft substrate.
- Underwater pinnacles are submerged rocky cones or outcrops that can be important areas where fish and other species aggregate. Underwater pinnacles exist in the study region, especially near the Channel Islands, but have not been well mapped. On substrata maps, these features are not categorized separately from hard-bottom habitats.

- Several submarine canyons exist within the study region. Notable canyons are found off Point Mugu, Palos Verdes Point, and La Jolla, among other areas. Canyons provide important habitat for deep-water communities and young rockfish, and provide foraging areas for seabirds and marine mammals.
- The Channel Islands, which include 8 major islands and a number of rocks and smaller islets, provide a unique ecological setting. The northern/western islands are associated with cooler, nutrient-rich waters and the southern/eastern islands are associated with warmer waters. This dynamic oceanographic setting and existence of high-relief rocky habitats at a variety of depths allows for a high level of biodiversity.
- The Southern California Bight creates complex oceanographic conditions in the south coast study region and results in unique ecological assemblages. A large gyre circulates water counter-clockwise and a number of smaller eddies and countercurrents add to the complexity of the oceanographic setting. A large upwelling center exists near Point Conception and draws deep, nutrient-rich waters to the surface. In addition, plumes following storm events contribute freshwater, sediment, and pollutants to the coastal marine environment.

The diverse habitats of the south coast study region host a wide diversity of species that may benefit from MPAs. This document describes some of the species that have special relevance to the MPA planning process, including:

- Regionally important species that are likely to benefit from MPAs identified by the SAT (to be added to the profile in the fall of 2008 and listed in Appendix II(a));
- Depleted or over-fished species, which include abalone, bocaccio, canary rockfish, cowcod, widow rockfish, and steelhead trout;
- Species targeted by commercial and/or recreational fisheries, which are an important component of the study region's economy, including California sheephead, California halibut, grunion, spiny lobster, and many others;
- Special status species that are protected under either state or federal law, including a number of pinnipeds, cetaceans, seabirds, and sea turtles, as well as steelhead trout, giant seabass, garibaldi, and the tidewater goby (listed in Appendix II(b)).

Land – Sea Interaction

Ecological linkages between the marine and terrestrial environments include:

- Fish that live offshore but move to estuaries, bays, and other more sheltered habitats to reproduce. Sole, rockfish, Pacific herring, and leopard sharks are among the species that depend on the marine and coastal habitats for their life histories;
- Anadromous and catadromous fish that migrate between the ocean and coastal rivers in their life history for spawning, rearing, and dying. Steelhead (anadromous) and striped mullet (catadromous) are found within the study region;
- Shorebirds and waterfowl that inhabit coastal lagoons, estuaries, and salt marshes (estuaries and bays of the study region form part of the Pacific Flyway, one of the four principal bird migration routes in North America);

- Marine mammals, including the California sea lions, northern elephant seals, and harbor seals, which use coastal rocks, sandy beaches, tidal flats, and estuaries as haul-out and for rookery sites; and
- Coastal and estuarine vegetation and nutrients, which are carried to the open ocean, where they provide temporary food and shelter to species including juvenile fish.

Terrestrial activities can have significant impacts on coastal water quality and habitat condition. Nearly 8,366 square miles of land in 19 major watersheds drain directly to the ocean. Some of the most important water quality issues include:

- Impaired rivers and waterbodies that have been identified under Section 303(d) of the federal Clean Water Act and have a total maximum daily load (TMDL) for pollutants;
- Recognized water quality management areas including state water quality protection areas (SWQPAs), areas of special biological significance (ASBSs), and California critical coastal areas (CCAs);
- The highest number of beach closures in California, mostly due to high bacteria levels from sewage spillages;
- Sediment contamination, with 94% of the study region sediments being affected by one or more contaminants. Contamination is typically linked to pollutants transported via urban runoff and released into the ocean from outfalls, with the most notable example on the Palos Verdes shelf where a superfund site was established due to high levels of dichloro-diphenyl-trichloroethane (DDT) and Polychlorinated biphenyl (PCBs) from decades of wastewater discharge;
- Point sources of pollution that empty into the coastal environment at specific locations and may cause localized impacts. Examples of point sources of pollution in the study region are wastewater treatment facilities, desalination plants, and stormwater outfalls;
- Nonpoint source pollution, which is a leading cause of degraded water quality in the study region, but it is difficult to identify sources as it derives from diffuse locations. Five major sources of nonpoint source pollution are agriculture, urban areas, resource extraction, hydromodification, and ports and associated vessels; and
- Coastal energy which involves development, extraction, and transportation of energy-related resources in coastal waters, as well as offshore. Projects include oil drilling, liquid natural gas, and coastal power plants.

Socioeconomic Setting

The MLPA South Coast Study Region has a complex socioeconomic setting that includes a large population, certainly highly urbanized areas, and industries and economic sectors that depend on marine resources. Recreational and commercial fishing, tourism and non-consumptive activities make significant contributions to coastal community economies in the five counties adjacent to the study region. Several types of socioeconomic information are included in this regional profile.

- Brief descriptions of the five coastal counties in the study region (Santa Barbara, Ventura, Los Angeles, Orange, and San Diego counties), including overall economic and population statistics and ocean-based economies wages.

- Commercial fishing statistics. Major commercial fisheries within the study region include Market squid, sea urchin, spiny lobster, coastal pelagic finfish, spot prawn, California halibut, and others. Over the past decade, average annual landings in the study region totaled nearly 254 million pounds with average annual ex-vessel revenue being $67.6 million. However, the overall number of commercial fishing vessels has decreased in recent years. The three major commercial fishing port complexes in the study region, as defined by CDFG, are Santa Barbara, Los Angles, and San Diego. Individual ports and harbors include Santa Barbara Harbor, Ventura, Port Hueneme, San Pedro, Terminal Island, Dana Point, Newport Beach, San Diego, Point Loma, and many others.
- Locations of kelp harvest and aquaculture leases in the study region. Administrative kelp beds exist throughout the study region, while aquaculture sites occur only in Santa Barbara County. Forty-eight kelp beds exist in the study region, of which 23 are open, 3 are closed, and 22 are leaseable. Land-based aquaculture operations in Santa Barbara include raising abalone, mussels, key hole limpets, and fishes. Shellfish aquaculture operations with active state water bottom leases cover a total area of 241 acres. White seabass are also reared within the study region at a number of locations.
- Recreational fishing statistics. Some of the major recreational fisheries within the study region include basses, rockfish, yellowtail, white seabass, surfperch, Pacific mackerel, Pacific sardine, and silversides. Common fishing modes include boat-based (Commercial Passenger Fishing Vessels, kayak angling and private/rental vessels), shore-based (beach/ bank fishing and from manmade structures), and other (spearfishing, clamming, abalone shore-picking and free-diving). In 2007, fishing from manmade structures was the most common mode and accounted for 1,341,343 recorded angler days. The second most common mode was beach and bank fishing with 766,709 angler days.
- Information on scientific collecting, for which approximately 1,950 permits were issued in 2007 by CDFG.
- Information on coastal tourism, including coastal park visitation rates. Los Angeles County experienced the highest travel spending for the study region. Five of the ten most visited state parks are located in the study region adjacent to the coast; they include Huntington, Bolsa Chica, San Onofre, Doheny, and Cardiff state beaches.
- Descriptions of non-consumptive activities, including beachgoing, surfing, boating, scuba diving, kayaking, tidepooling, and wildlife viewing.
- Information on alterations to the coast. Alterations include beach nourishment, beach grooming, dredging, coastal armoring, and coastal lighting. In the study region, coastal alterations are common with over 600 nourishment projects, more than 160 km of groomed beaches, and more than 65% of the coast being armored.
- Vessel traffic. The Port of Los Angeles complex is one of the busiest in the country, followed by the Port of Long Beach and the San Diego Harbor. Transportation of oil and petroleum products is a major activity of vessels traveling in and out of these ports.

Academic Institutions, Research, Public Outreach, and Education

There are a number of institutions with marine research or educational objectives in the study region. The locations of major research institutions and scientific collecting/monitoring sites

(including Partnership for Interdisciplinary Studies of Coastal Oceans and Multi-agency Rocky Intertidal Network sites) have been mapped. In addition, information on monitoring and educational programs and organizations has been compiled in this regional profile, demonstrating potential opportunities for future research and education associated with MPAs.

Jurisdiction and Management

Numerous federal, state and local government bodies have jurisdiction in the study region. A large percentage of terrestrial lands adjacent to the study region are owned and operated by the California Department of Parks and Recreation and the U.S. Department of Defense. In addition, 19 federally recognized Native American groups, as well as numerous federally unrecognized groups are located within coastal areas adjacent to the study region.

Existing MPAs, Marine Managed Areas, and Coastal Protected Areas

Existing state MPAs, marine managed areas, fishery closures, and other coastal protected areas are described for the region, including:

- Descriptions of the 42 existing state MPAs and 3 special closures, which cover 7.7% of the total study region area;
- Information on other marine managed areas within or adjacent to the study region (such as national marine sanctuaries) and fishery closures (such as the rockfish conservation areas and groundfish essential fish habitat no-trawl or no-bottom contact zones);
- Information on areas of limited access due to military operations or power plant closures; and
- Information on terrestrial protected areas, such as national monuments, national parks, wildlife refuges, state beaches and parks, and county beaches, which may have relevance to MPAs for public access and management purposes.

Subregional Summary

The MLPA South Coast Study Region has been divided into seven subregions for ease of data display and to facilitate identification of important local issues. This regional profile will summarize the main ecological, socioeconomic, and management attributes of each subregion, incorporating information provided by stakeholders. The seven subregions are:

- Point Conception (Government Point) to Rincon Point (subregion 1)
- Rincon Point to Point Dume (subregion 2)
- Point Dume to Newport Beach (subregion 3)
- Newport Beach to Agua Hedionda (subregion 4)
- Agua Hedionda to California - Mexico border (subregion 5)
- Northern Channel Islands (subregion 6)
- Southern Channel Islands (subregion 7).

Conclusion

The MLPA South Coast Study Region contains a diverse array of habitats located in a dynamic oceanographic setting at the intersection of two major biogeographic regions. Complex bathymetry, including deep submarine canyons and offshore ridges and islands on a broad